

Thromboprophylaxis – a comparison of practice in Scotland with England and Wales.

Despite extensive research into thromboembolism following lower limb arthroplasty, and numerous good quality studies (Bailey 1991, Kim et al 1998, Bauer KA et al 2001, Francis et al 2002, Eriksson et al 2003, Colwell et al 2003) and meta-analyses (Imperiale and Speroff 1994, Brookenthal et al 2001, Westrich et al 2000) on mechanical and chemoprophylaxis, there remains a good deal of disagreement and confusion as to the best prophylactic measures to adopt.

In March 2003, 119 orthopaedic consultants were questioned about their thromboprophylaxis policy by staff from the Scottish Trauma Audit for the Scottish Arthroplasty Project. Outlined below are the results from this survey. The results from the first annual report of the English and Welsh National Joint Registry are used for comparison.

There is little difference in the thromboprophylactic measures favoured by surgeons in this survey for hip and knee arthroplasty. The same is true for surgeons in England and Wales [Table 1, Table 2]. There is a slightly greater use of isolated chemical or mechanical prophylaxis over combined prophylaxis in knee arthroplasty [Table 6, Table 10].

It is notable that 94% of consultant orthopaedic surgeons in Scotland report that they have a thromboprophylaxis policy in place. This is an increase from the 77% reported in a survey of all British orthopaedic surgeons performed in 2001 (Brenkel and Cook, 2003).

The use of aspirin as chemothromboprophylaxis is much more widespread in Scotland than in the rest of the UK. This is in line with the recommendations of the Scottish Intercollegiate Guidelines Network (SIGN) produced in 2002. The SIGN guideline advice on the use of aspirin is based in part on the results of the Pulmonary Embolism Prevention (PEP) trial (PEP Trial Collaborative group 2000), which has been heavily criticised (Cohen and Quinlan 2000, Cimminiello 2000, Mahe et al 2000, Tauzeeh 2000, Parker 2000, Thomas 2000). This advice is now contrary to the recommendations of the American College of Chest Physicians published this year (Geerts et al 2004). Aspirin does have two advantages: ease of administration for extended prophylaxis, and cardio protective effects.

Extended prophylaxis is finding increased favour amongst orthopaedic surgeons with strong evidence that patients have an increased risk of thromboembolism up to six weeks following surgery and that VTE (venous thromboembolism) rates can be reduced with chemoprophylaxis out of hospital (Cohen et al 2001, Eikelboom et al 2001, Arnesen et al 2003, O'Donnell et al 2003). In the current survey over 60% of surgeons favour extending thromboprophylaxis to six weeks or longer.

Low molecular weight heparin (LMWH) is used alone or with mechanical prophylaxis by 28% of surgeons for hip arthroplasty [Table 5]. If we include those who favour the use of aspirin in addition to LMWH, presumably more for its cardio protective effects, then this figure rises to 44%. The majority of these use mechanical prophylaxis in addition (28%).

Mechanical prophylaxis is used in isolation by relatively few orthopaedic surgeons with the majority favouring a combined approach [Table 6]. Of those using mechanical prophylaxis alone foot pumps are favoured by most, with or without graded elastic compression (GEC) stockings. There are concerns that efficacy may be poorer (Norgren et al 1998), and compliance may be an issue; mechanical devices are not universally tolerated by patients (Pitto et al 2004). GEC stockings may be applied incorrectly, actually producing a reverse gradient in the calf (Best et al 2000). GEC stockings are used much more commonly in the rest of the UK than they are in Scotland [Table 1].

In conclusion, Aspirin is much more widely used in Scotland than in the rest of the UK, and its use has continued to increase since the survey performed by Brenkel and Cook (2003). The use of mechanical prophylaxis has increased overall but the use of GEC stockings, whilst equivalent to the use in the rest of the UK, is decreasing in Scotland.

Results from the English and Welsh NJR 1st Annual Report 2004

Table 1 – *Thromboprophylaxis regime for primary hip replacement patients, recommended at time of operation*

Thromboprophylaxis regime	Frequency of use
Aspirin	4,777 (21.1)
Chloroquine	11 (0)
Low dose heparin	1,009 (4.5)
Low molecular weight heparin (LMWH)	10,572 (46.6)
Pentasaccharide	121 (0.5)
Warfarin	984 (4.3)
Foot pump	4,600 (20.3)
Intermittent calf compression	4,956 (21.9)
TED stockings	11,709 (51.7)
Other	574 (2.5)
None selected	1,880 (8.3)

Table 2– *Thromboprophylaxis regime for primary knee replacement patients, recommended at time of operation*

Thromboprophylaxis regime	Frequency of use
Aspirin	4,443 (21.1)
Chloroquine	7 (0)
Low dose heparin	875 (4.2)
Low molecular weight heparin	9,002 (43.2)
Pentasaccharide	88 (0.4)
Warfarin	529 (2.5)
Foot pump	4,313 (20.7)
Intermittent calf compression	4,336 (20.8)
TED stockings	10,272 (49.3)
Other	551 (2.6)
None selected	1,977 (9.5)

Results from The Scottish Arthroplasty Project Audit of Consultant Practice, 2003

Hip Replacement Thromboprophylaxis

Table 3 - Thromboprophylaxis policy in place ?

thromboprophylaxis policy	number	%
yes	107	93.9
no	7	6.1
total answered	114	100.0
missing	5	

Table 4 - How long is thromboprophylaxis used for?

thromboprophylaxis time	number	%
during inpatient stay	36	32.1
2 weeks	5	4.5
6 weeks	59	52.7
longer	12	10.7
total answered	112	100.0
missing	7	

Table 5 - Type of prophylaxis used

Type of thromboprophylaxis		number	%
All Aspirin		51	44.7
	Aspirin alone	13	11.4
	Aspirin & stockings	16	14.0
	Aspirin & pumps	16	14.0
	Aspirin & pumps & stockings	6	5.3
All LMWH		22	28.1
	LMWH	13	11.4
	LMWH & stockings	17	14.9
	LMWH & pump	2	1.8
All Aspirin and LMWH		18	15.8
	Aspirin & LMWH	5	4.4
	Aspirin & LMWH & stockings	8	7.0
	Aspirin & LMWH & pump	5	4.4
All Heparin		5	3.5
	Heparin	3	2.6
	Heparin & stockings	1	0.9
Dextran and stockings		1	0.9
All mechanical alone		8	7.1
	Stockings alone	2	1.8
	Pump alone	4	3.5
	Pump & stockings	2	1.8
TOTAL ANSWERED		114	100.0
MISSING		5	

Table 6 - Summary

chemical alone	34	29.8%
mechanical alone	8	7.0%
chemical and mechanical combined	72	63.2%
total	114	100.0%

Knee Replacement Thromboprophylaxis

Table 7 - Thromboprophylaxis policy in place ?

thromboprophylaxis policy	number	%
yes	108	98.2
no	2	1.8
total answered	110	100.0
missing	9	

Table 8 - How long is thromboprophylaxis used for?

thromboprophylaxis time	number	%
during inpatient stay only	35	32.4
2 weeks	5	4.6
6 weeks	62	57.4
3months	6	5.6
total answered	108	100.0
missing	11	

Table 9 - Type of prophylaxis used

Type of thromboprophylaxis		number	%
All Aspirin		57	51.8
	Aspirin alone	18	16.4
	Aspirin & stockings	19	17.3
	Aspirin & pumps	16	14.5
	Aspirin & pumps & stockings	4	3.6
All LMWH		25	22.7
	LMWH	15	13.6
	LMWH & stockings	9	8.2
	LMWH & pump	1	0.9
All Aspirin and LMWH		11	10.0
	Aspirin & LMWH	3	2.7
	Aspirin & LMWH & stockings	7	6.4
	Aspirin & LMWH & pump	1	0.9
All Heparin		4	1.8
	Heparin	1	0.9
	Heparin & stockings	1	0.9
Dextran and stockings		2	1.8
All mechanical alone		13	11.8
	Stockings alone	4	3.6
	Pump alone	6	5.5
	Pump & stockings	3	2.7
TOTAL ANSWERED		110	100
MISSING		9	

Table 10 - Summary

chemical alone	37	33.6%
mechanical alone	13	11.8%
chemical and mechanical combined	60	54.5%
total	110	100.0%

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